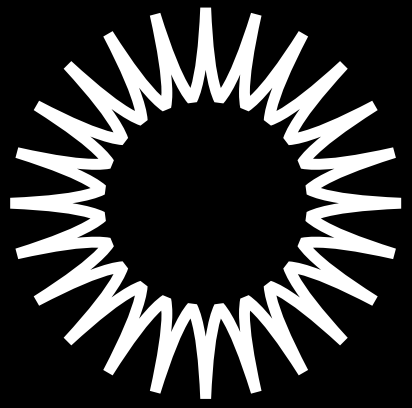


SPUR

Ideas + Action for a Better City

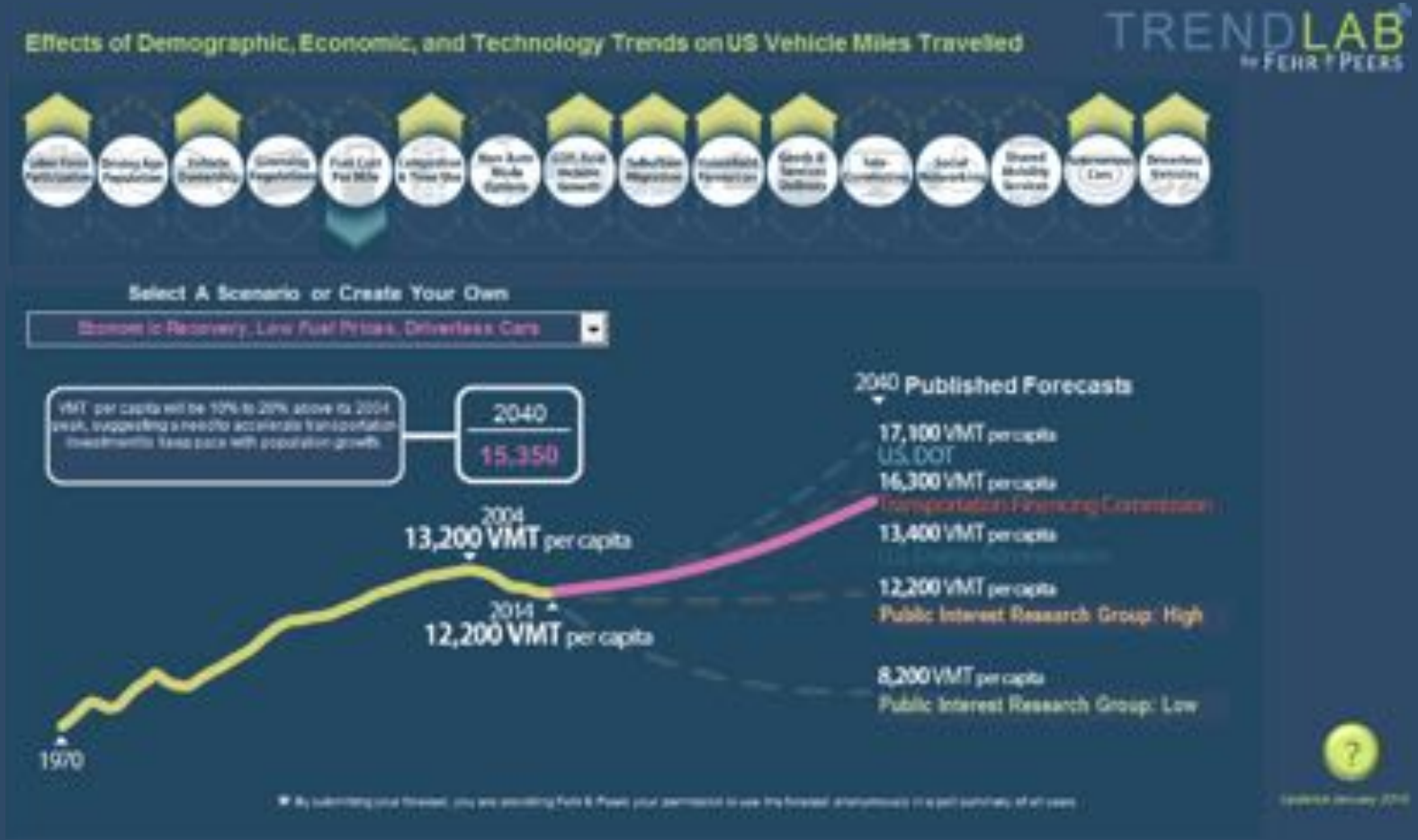
learn more at SPUR.org

tweet about this event:
@SPUR_Urbanist
#DisruptiveTransportation

TNCs & AVs

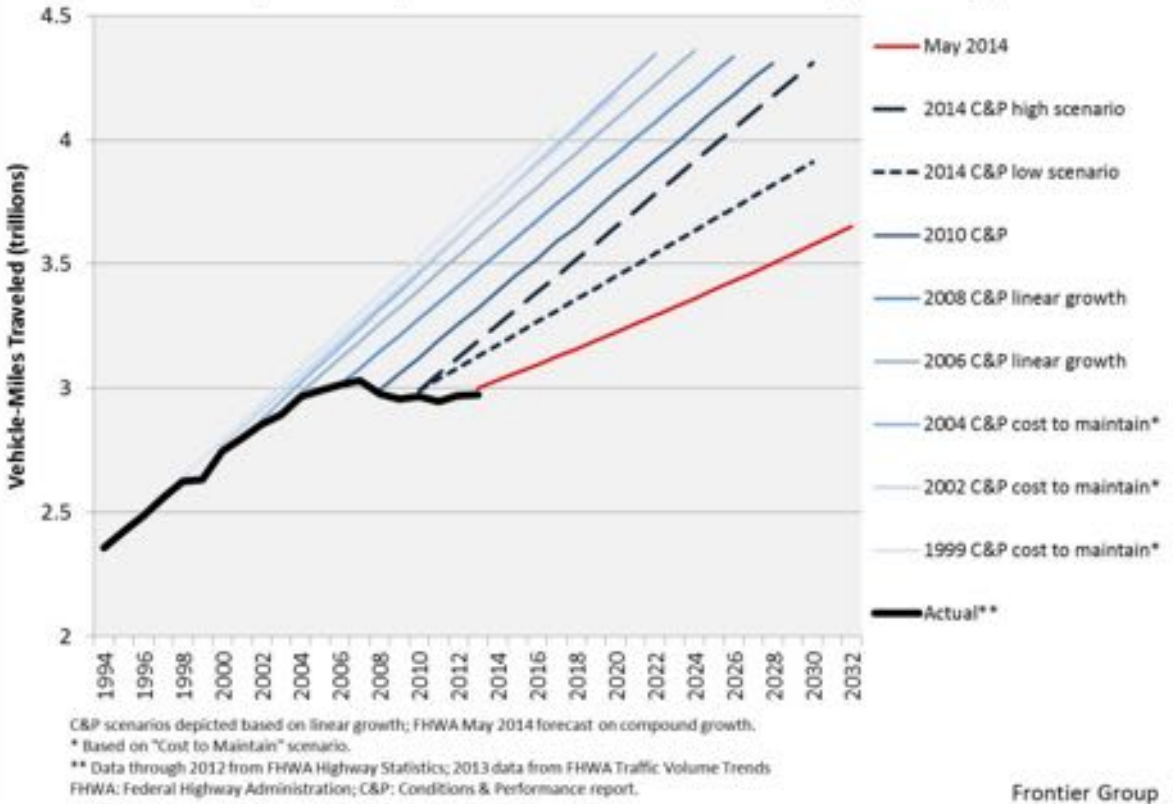
FEHR & PEERS

The Future Is Uncertain



The Future Is Uncertain

U.S. Dept of Transportation Forecasts of Future Driving vs. Reality

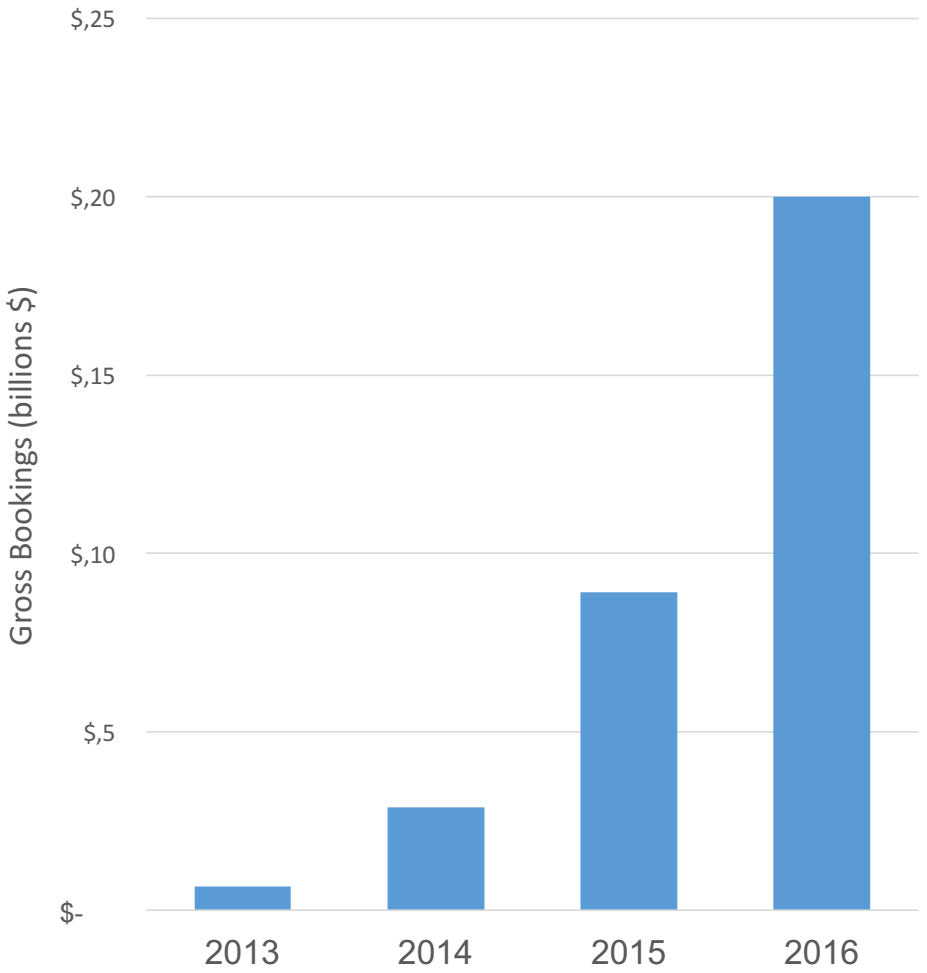


C&P scenarios depicted based on linear growth; FHWA May 2014 forecast on compound growth.
* Based on "Cost to Maintain" scenario.
** Data through 2012 from FHWA Highway Statistics; 2013 data from FHWA Traffic Volume Trends
FHWA: Federal Highway Administration; C&P: Conditions & Performance report.

Frontier Group


The
Future is Already
Here, Just
Unevenly
Distributed
FEHR PEERS

The TNC markets has experienced astonishing growth



TNCs by the numbers – SF Snapshot

- 21% of American adults report using Uber or Lyft[1]
- 70% of San Francisco residents have used a TNC service at least once, 40% use them at least once per month, and 20% use them at least once per week
- TNC use is higher among wealthier households, households in denser neighborhoods, and young adults
- Around 7% of all trips by Bay Area residents under age 35 are made by TNC; this number is higher for San Francisco residents.
- TNC use has doubled in San Francisco from 2015 to 2016, from around 2% of all trips to 4% of all trips. Based on modeled person trips from SF-CHAMP, this could represent around 150,000 average daily trips by TNC / 75,000 additional average daily TNC trips.
- Initial survey data suggest a substantial share of TNC trips may have shifted from transit

[1] Clewlow, RR & Mishra, Disruptive Transportation: The Adoption , Utilization, and Impacts of Ride-Hailing in the United States, UC Davis ITS 2017

In some instances, TNCs may be shifting people away from “non-auto” modes

- Mode shifts away from transit, walk, and bike
- Serving latent travel demand, but increasing VMT

	San Francisco	Denver
Mode Shifts from		
• **Transit**	35 – 40 %	20 – 25 %
• **Walk /Bike**	10 %	10 – 15 %
• **Taxi / Auto**	50 – 55 %	60 – 70 %
Induced Trips	8 %	12 %
Added Vehicle Trips	~50 % (of TNC)	

FEHR & PEERS

There may be a steep VMT downside to some TNC ridership

New vehicle and TNC trips generate VMT in both new and novel ways (and less productive) :

- Induced trips i.e. trip that would not have occurred
- Conversion of a ped/bike/transit trip to vehicle trips
- (to/from home to driving area)
- (waiting for a request/cruising)
- (the ‘pre-trip’, since the driver first needs to come to you)
- (distant pickups or drop-offs due if sharing)

A doubling effect on VMT

Potential effects on Vision Zero, GHG goals

FEHR PEERS

TNCs have been good for the ‘speculating about what’s going on with transit’ business

Metro Continues Steep Ridership Decline Amid Nationwide Trend Of Transit Losses

Uber and Lyft use at SFO increases six-fold in two years, BART loses ridership

SF may consider imposing fee on Uber, Lyft rides

Subway Ridership Declines in New York. Is Uber to Blame?

By EMMA G. FITZSIMMONS FEB. 23, 2017

What Factors Are Causing Metro’s Declining Ridership? What Next?

By Joe Linton | Jan 29, 2016 | 45

CANADA

A Canadian Town Wanted a Transit System. It Hired Uber.

By CRAIG S. SMITH MAY 16, 2017

News > Transportation

BART’s Oakland Airport Connector losing money; Uber, Lyft to blame?

Lyft Shuttle is an experimental new Lyft Line feature that works like a bus route

Posted Mar 29, 2017 by Darrell Etherington (@etherington)

FEHR & PEERS

Effect on Transit in NYC (Schaller)

Figure 10. Changes in ridership by mode, 2013 to 2014

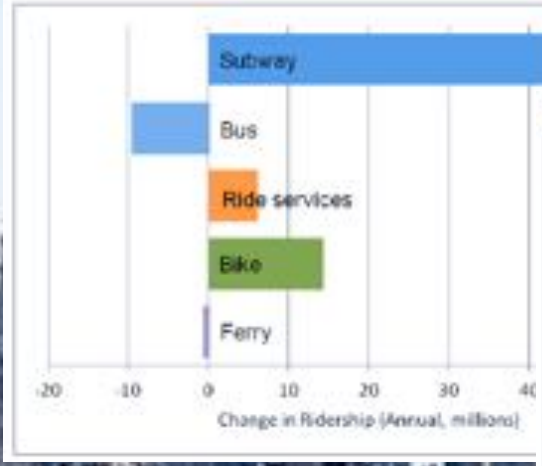


Figure 11. Changes in ridership by mode, 2014 to 2015

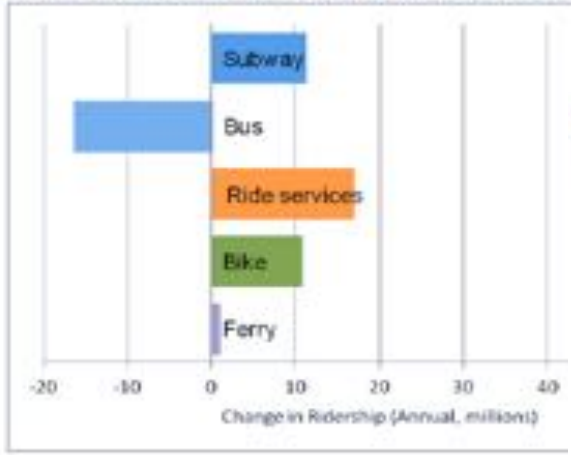
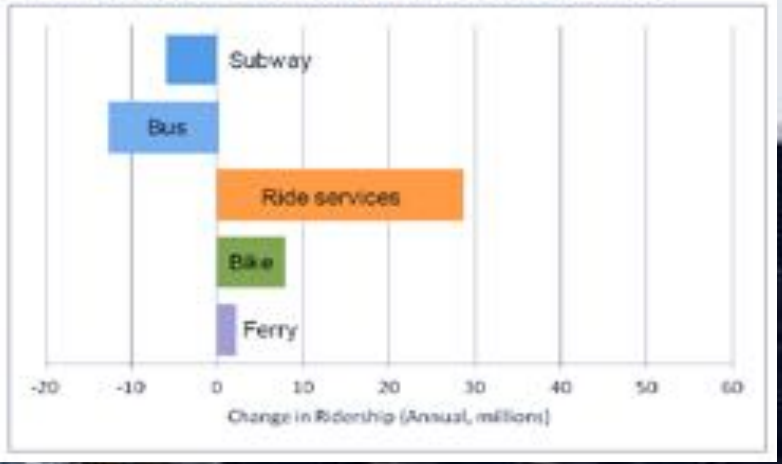
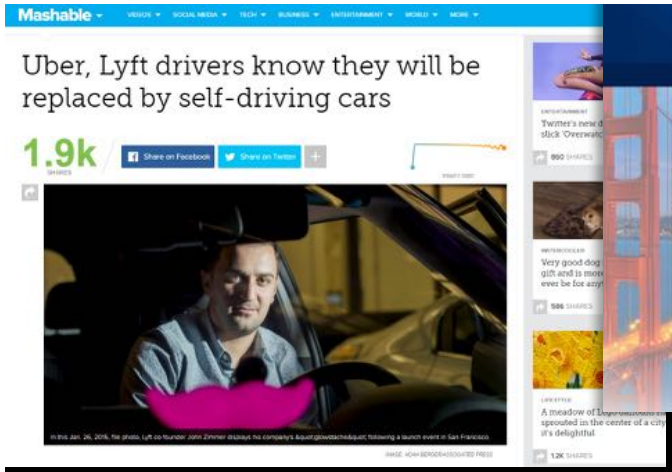


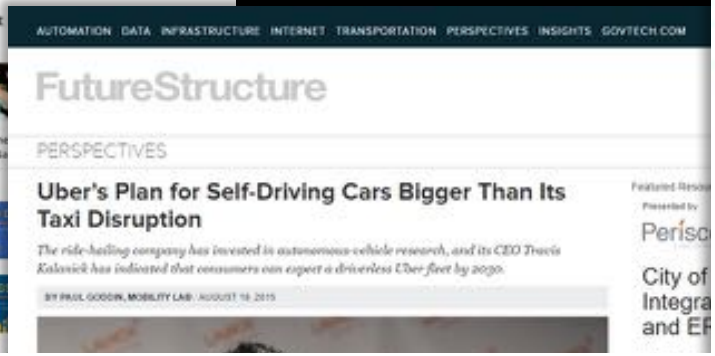
Figure 12. Changes in ridership by mode, 2015 to 2016



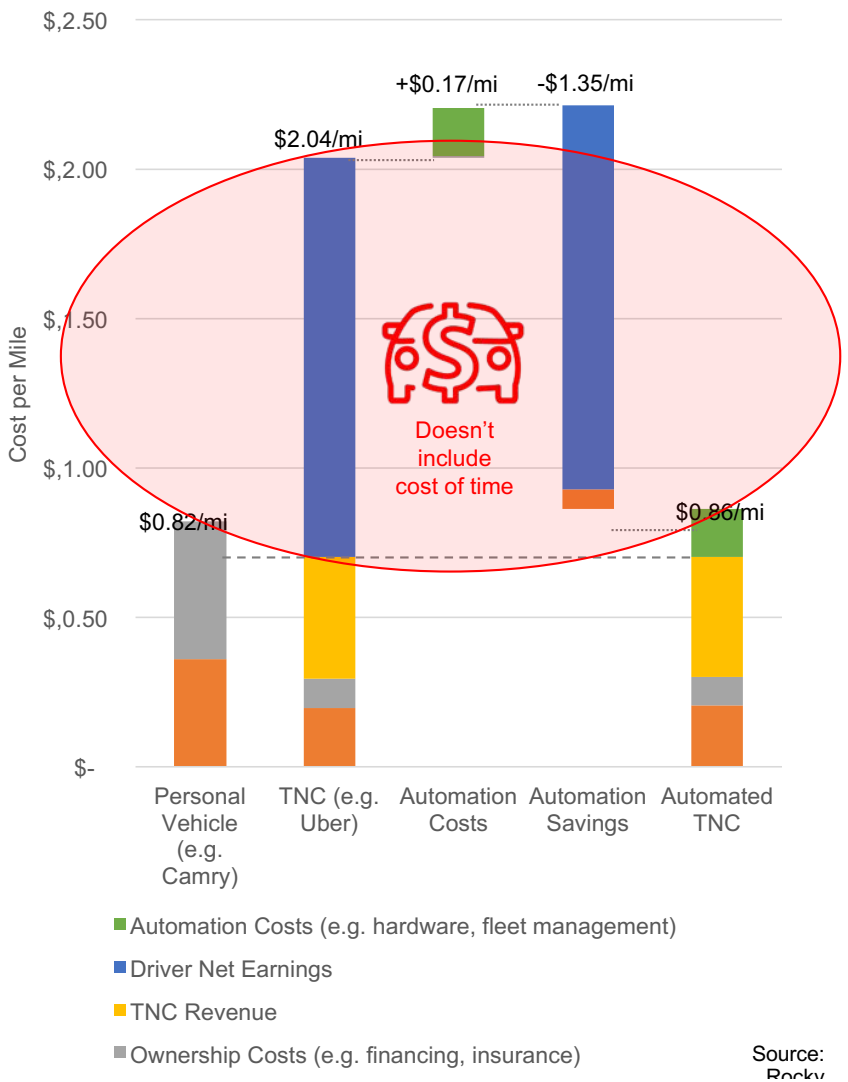
FEHR PEERS



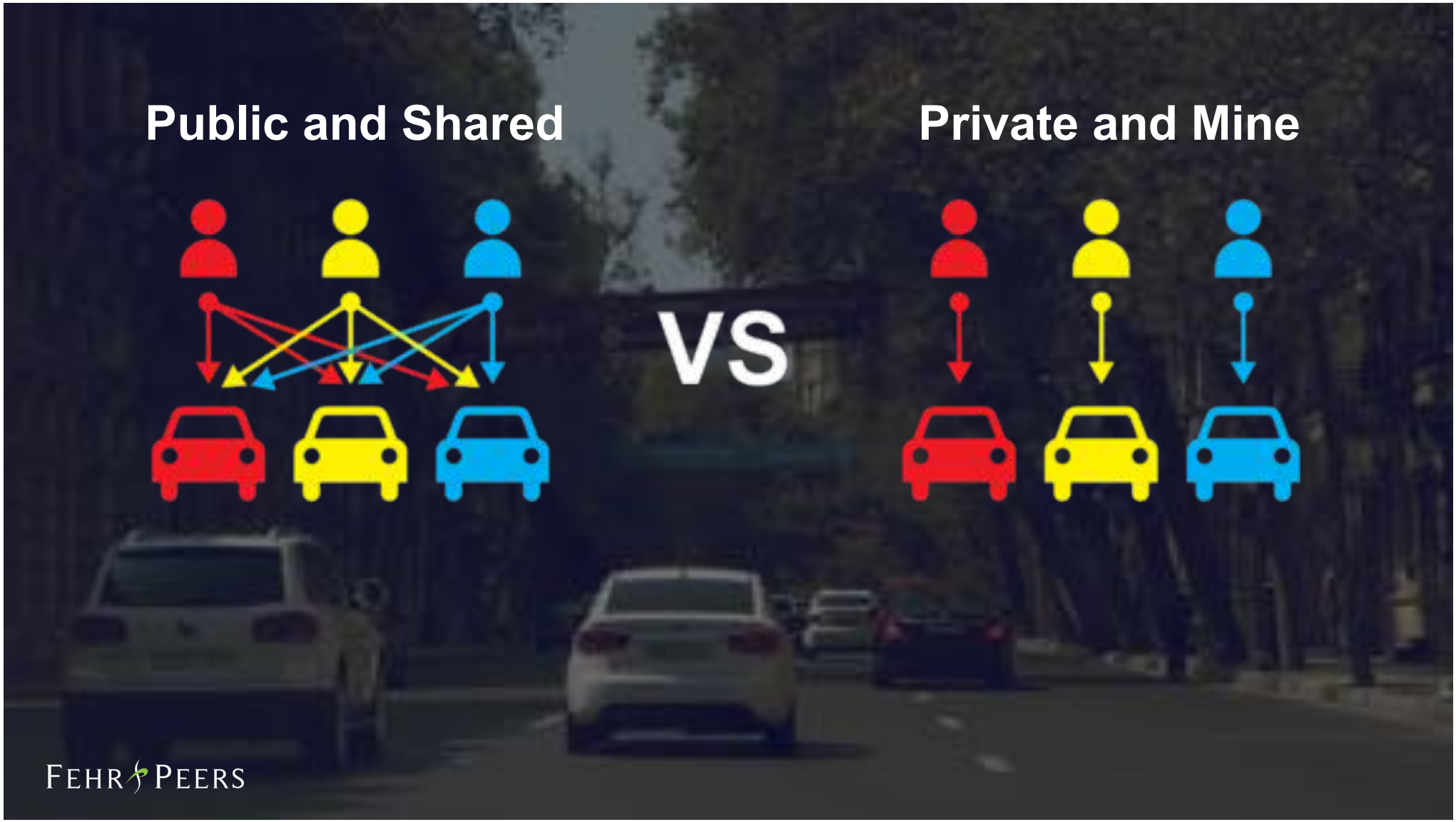
Trend towards AVs replacing TNC drivers is clear, even if progress is disjointed



Impacts are likely to become more pronounced as AVs replace TNC drivers



Source:

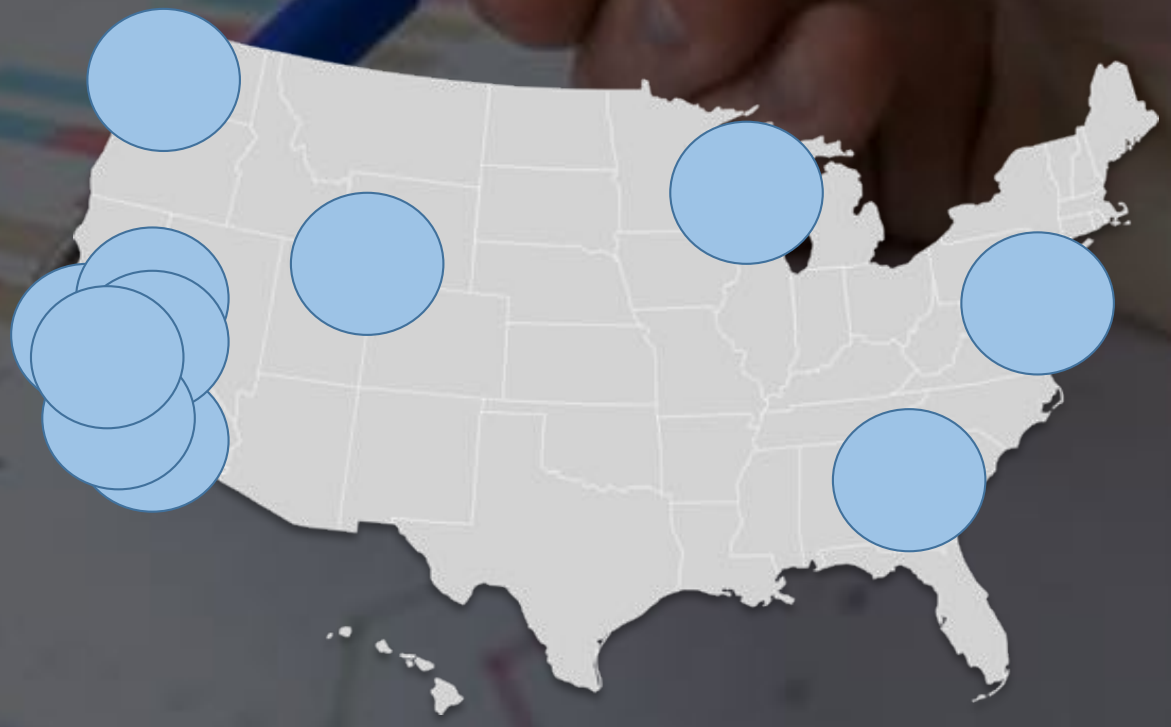

Public and Shared
VS
Private and Mine
FEHR PEERS


Land Use
VMT/GHG
Mobility Choices
FEHR PEERS


The Question Is: Can We Model These Effects?
FEHR PEERS

What We Did

- Tested nine regional models + two others
- Tested eight potential effects
- Two Cumulative Scenarios



FEHR PEERS

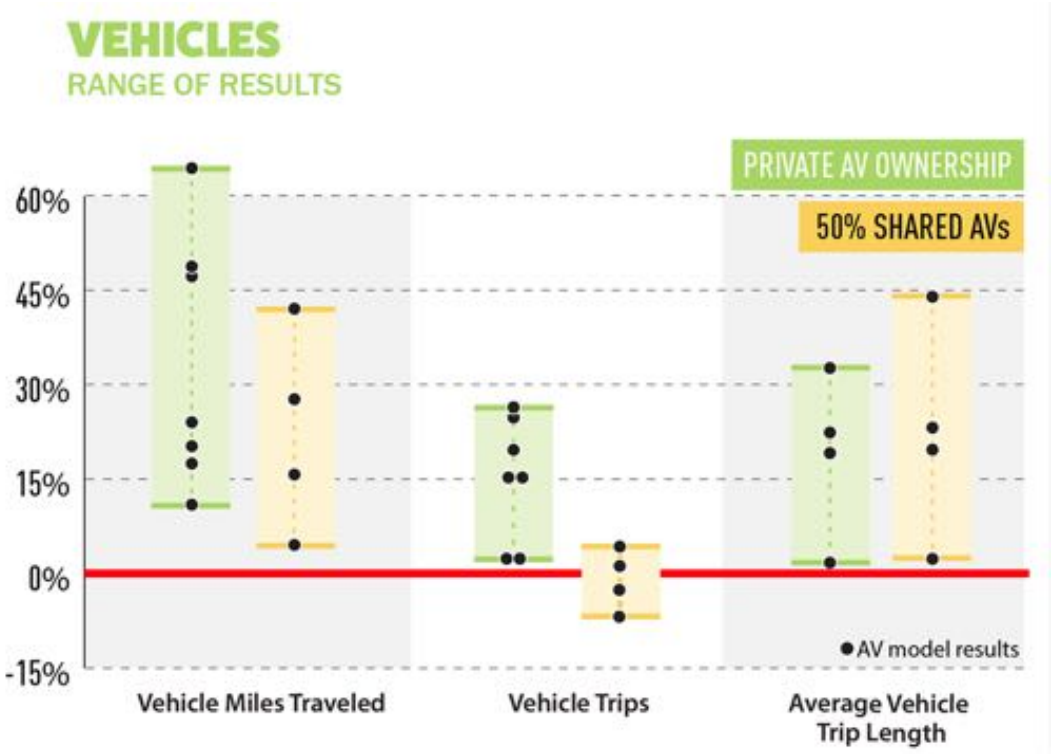
AV Effects

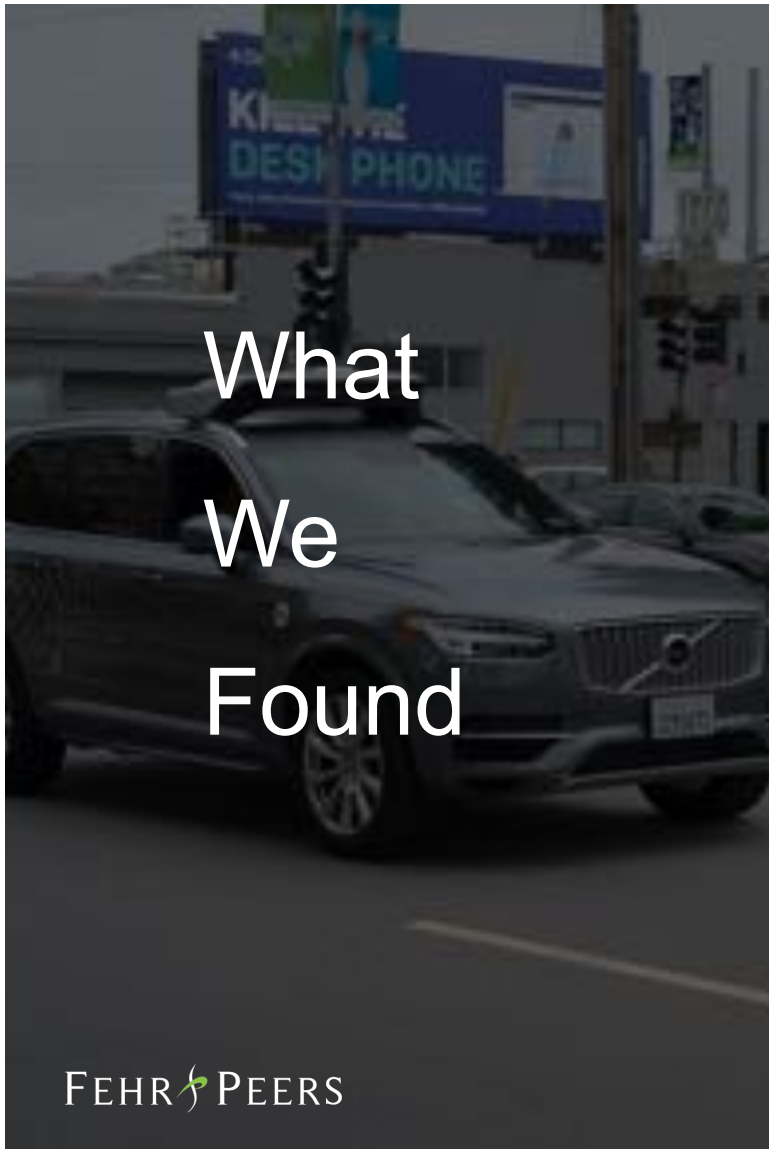
Fehr & Peers Testing

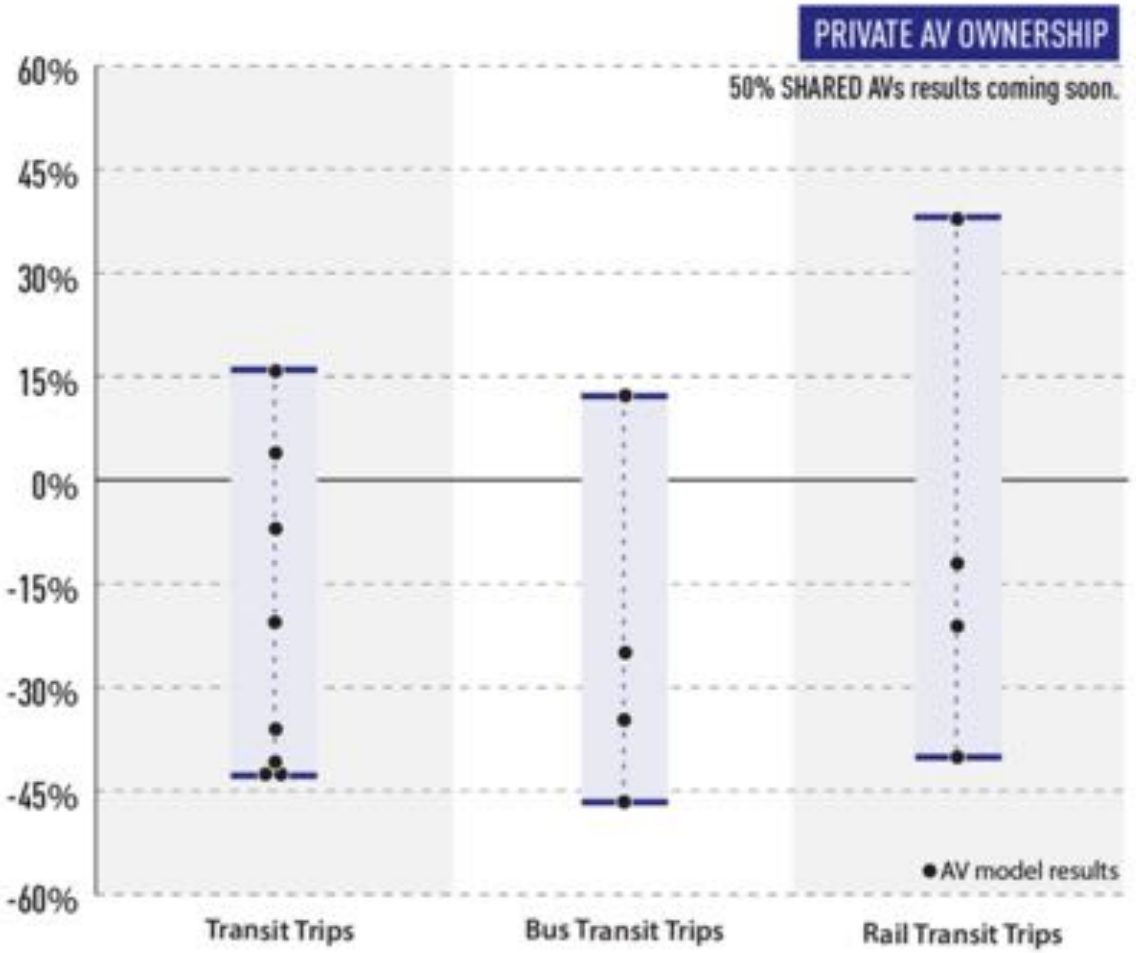
- Tests
  1. Decrease access time
  2. Decrease parking costs
  3. Decrease vehicle operating costs
  4. Decrease impact of time lost driving
  5. Increase auto availability
  6. Increase freeway capacity
  7. Increase non-work trip-making
  8. Increase auto occupancy

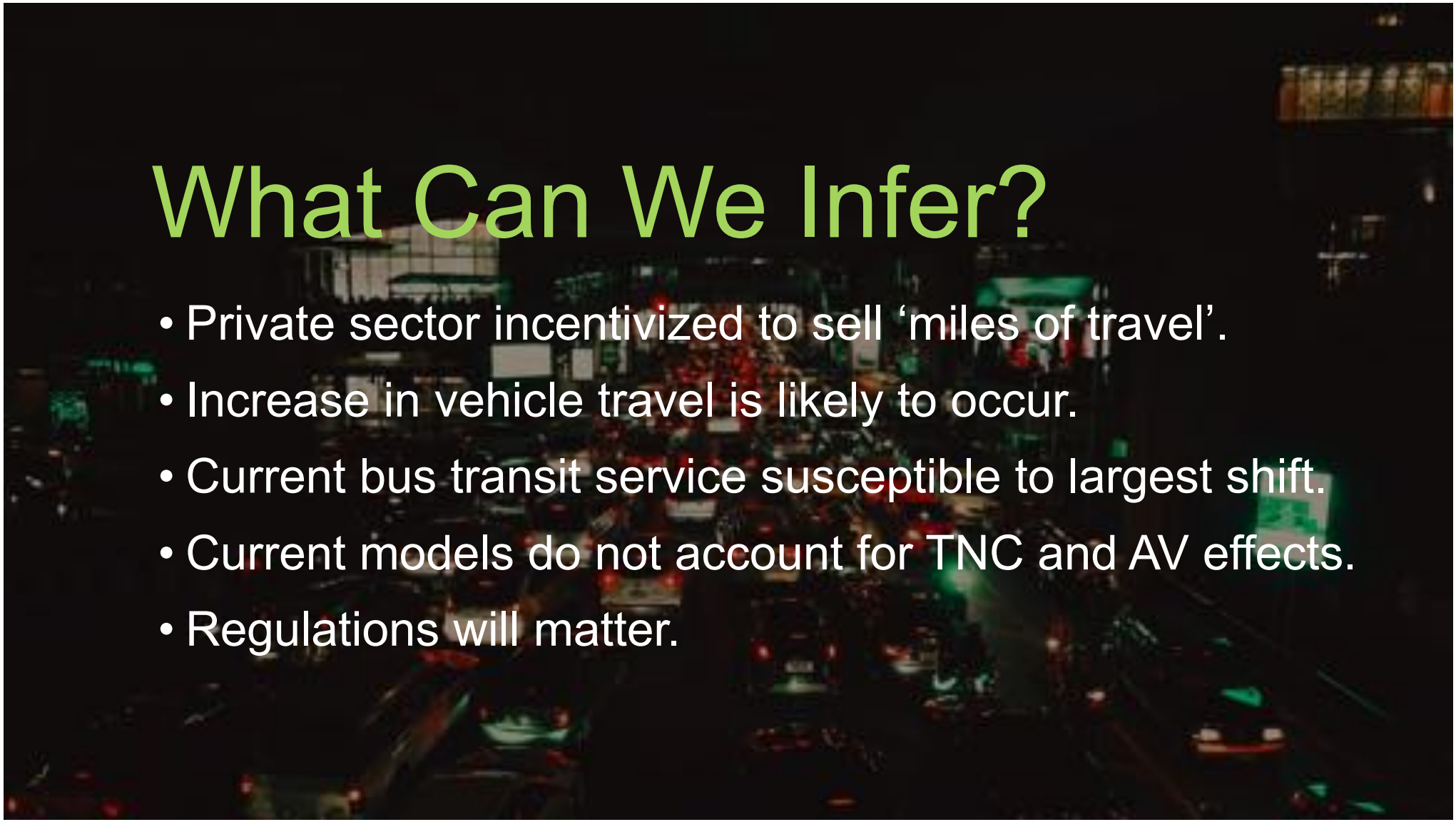
FEHR PEERS

What We Found




What
We
Found
FEHR PEERS


PRIVATE AV OWNERSHIP
50% SHARED AVs results coming soon.
60%
45%
30%
15%
0%
-15%
-30%
-45%
-60%
AV model results
Transit Trips
Bus Transit Trips
Rail Transit Trips



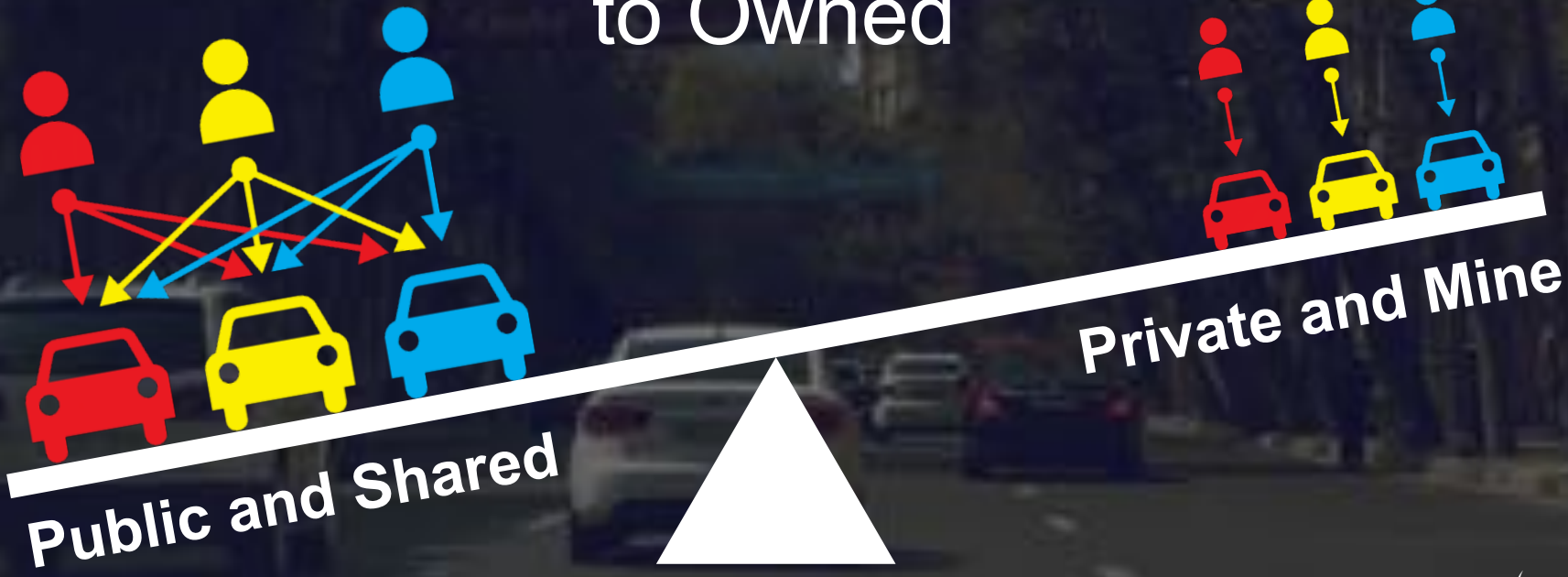
What Can We Infer?

- Private sector incentivized to sell ‘miles of travel’.
- Increase in vehicle travel is likely to occur.
- Current bus transit service susceptible to largest shift.
- Current models do not account for TNC and AV effects.
- Regulations will matter.


So What:
Policy
FEHR PEERS

A Role For Policy:

Encourage of and/or Subsidize Shared AV Use as Opposed to Owned



FEHR PEERS


A Role For Policy: Investment in frequent, quality transit service in urban areas as well as cycling and pedestrian safety infrastructure in all areas
FEHR PEERS

A Role For Policy: Determine if a cap on the number of lanes or areas available to AVs is appropriate

A Role For Policy:

Consider whether separate facilities and/or whether road use pricing or priority schemes is appropriate

A Role For Policy: Create additional opportunities for passenger and commercial loading

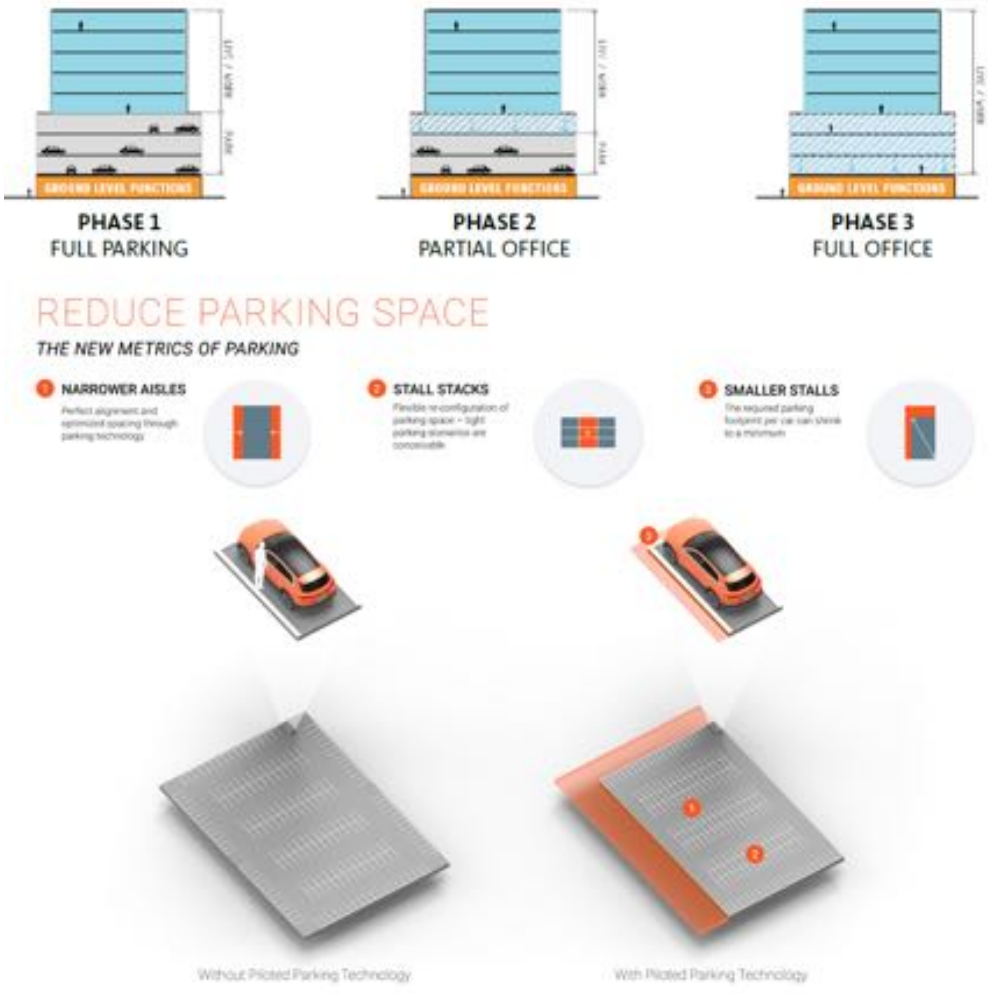
A Role For Policy: Prepare for the consequences of reduced sensitivity to in vehicle time

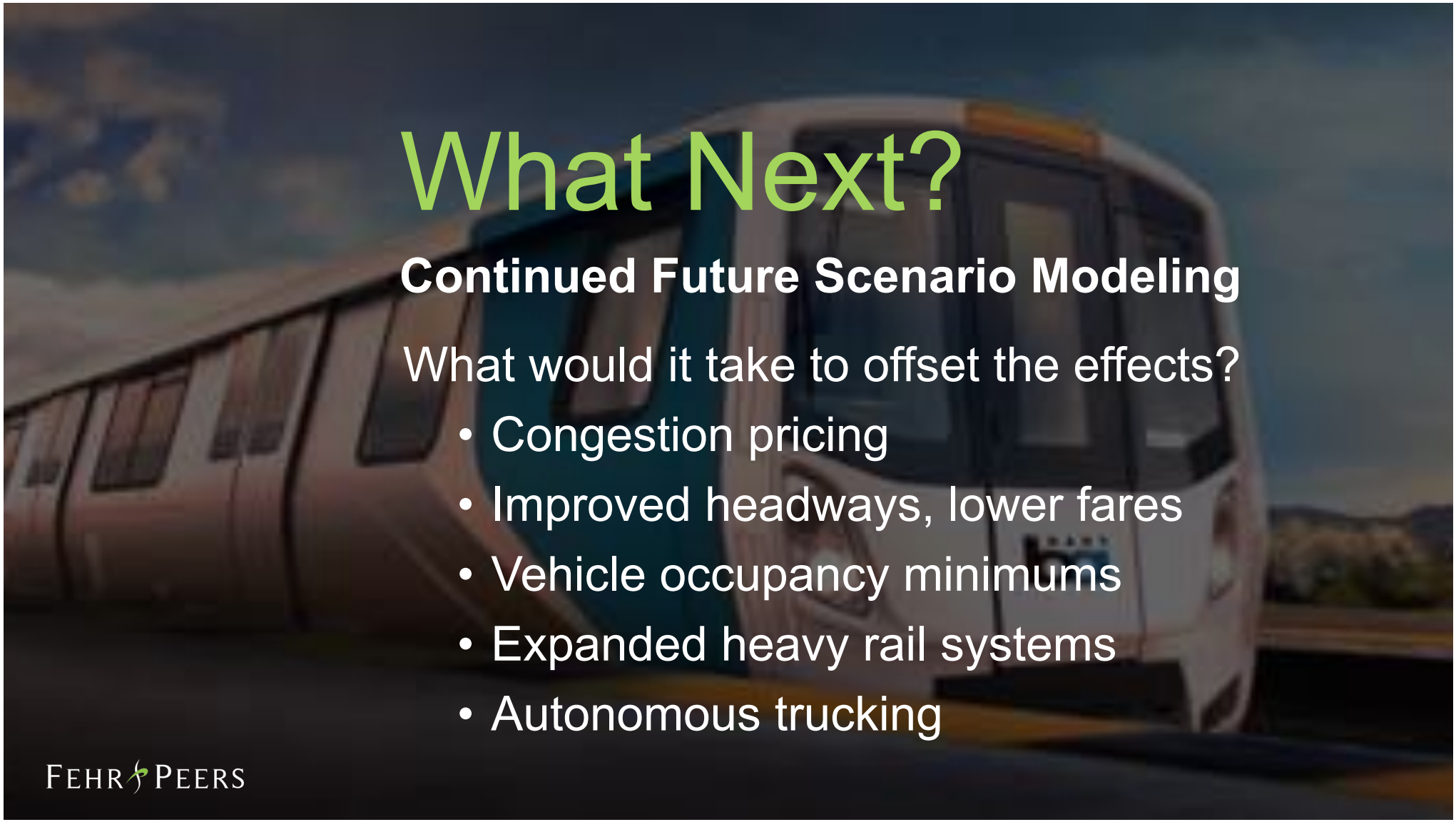
FEHR & PEERS

A Role For Policy:

Prepare for what is now parking to become available to become available as well as design any future urban parking facilities for eventual conversion

FEHR PEERS





What Next?

Continued Future Scenario Modeling

What would it take to offset the effects?

- Congestion pricing
- Improved headways, lower fares
- Vehicle occupancy minimums
- Expanded heavy rail systems
- Autonomous trucking

FEHR & PEERS

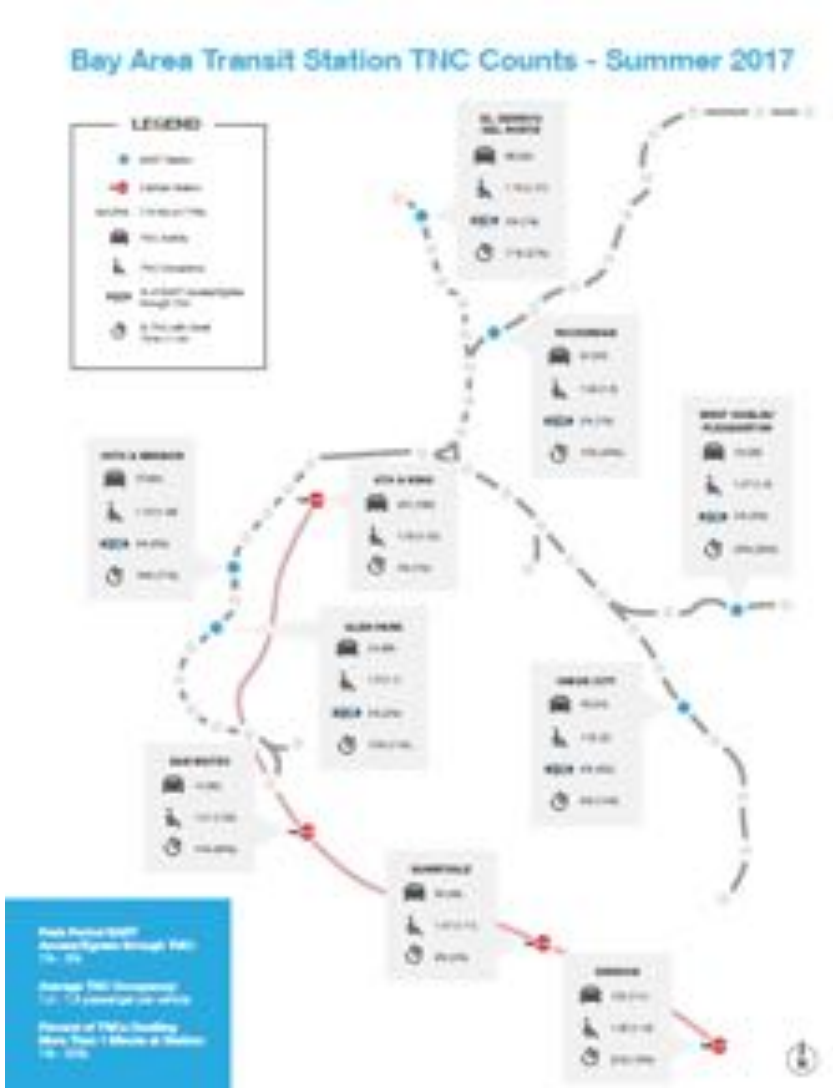
What Next?

Data Collection

Attributes

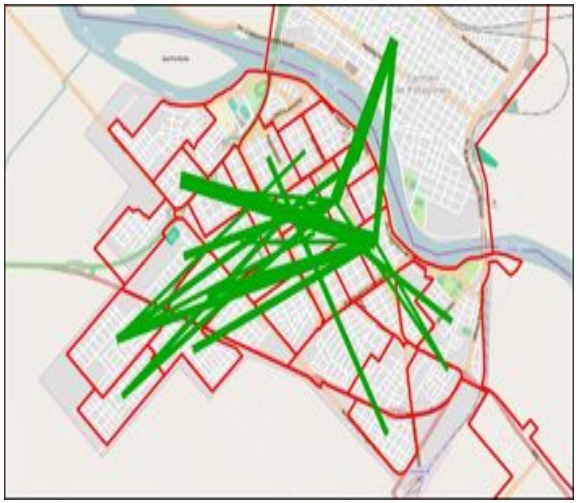
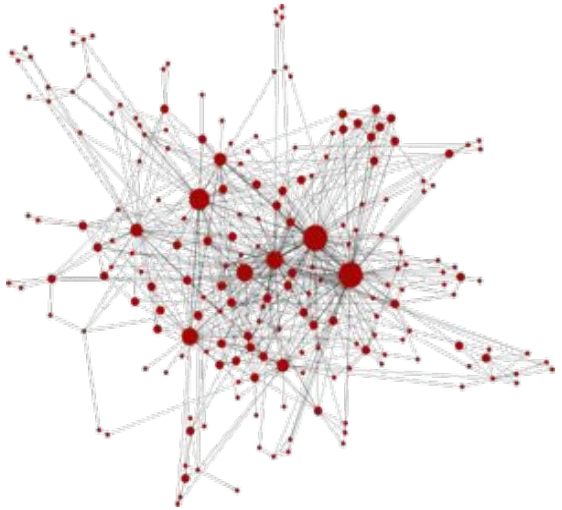
- 20 high activity sites
- 12 hour period (Friday)
- 2 video cameras
  - Records continuously
- 2 time lapse camera
  - Provides ability to distinguish vehicle types

FEHR PEERS



What Next?

Travel demand profiles for transit and solo travel show the most effective roles of right-sized transit and TNC

Backbone		Crowd-Sourced		Door-to-Door	
					
Rail	**Hi Cap Bus, BRT**	**Coverage Bus**	**Shuttles**	**Pooling**	**Drive**
High density, limited linear corridors	**High / Moderate demand density corridor trunks**	**Moderate demand corridors and branches**		**Low moderate many-many demand landscape**	**Low demand landscape**


What Next?
Quantify TNC and AV effect on:
status quo revenue models (gas tax,
parking revenue, user fees, etc.)
land use, equity, parking demand,
retail models, etc.